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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,553	04/12/2004	Lizy K. John	888.013US1	1807

21186 7590 02/21/2007

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
LAI, VINCENT	
ART UNIT	**PAPER NUMBER**
2181	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,553	JOHN ET AL.	
	Examiner	Art Unit	
	Vincent Lai	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. This application claims priority to Application No. 60/462,513, filed 11 April 2003.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 26 May 2004 was considered by the examiner.

Response to Arguments

3. Examiner withdraws the request for a new oath or declaration in light of the newly submitted oath.

4. Examiner withdraws objection to drawings in light of the explanation given in the remarks received on 1 December 2006.

5. Examiner withdraws objection to the title in light of newly submitted title.

6. The 35 USC 101 rejection of claims 10-13 regarding the term limitation of "machine-accessible medium" is withdrawn after considering the Amendments.

7. Applicant's arguments filed 1 December 2006 have been fully considered but they are not persuasive.

Even with the amendment limitation of a prediction in claims 1 and 31 (thus affecting claims 2-9, and 32-34), the claims are still directed to non-statutory subject matter. Without an inclusion of an ending step to actually use a determination or prediction, a claim is viewed as not having a concrete and tangible result.

The amendment of "including a memory" does not satisfy nor correct issues the 35 USC 101 issues related to claims 10-13, as including a memory does not disallow or separate the non-statutory subject matter that is entailed with machine-accessible medium.

Applicant argues that Li does not teach "a split branch history shift register predictor" as claimed in the amended claims.

Examiner disagrees and the amended claims are addressed below.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1-9, 10-13, and 31-34 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Steps of predicting in claims 1 and 31; steps of accessing in claim 10; steps of retrieving in claims 2; and steps of determining in claims 6-7, and 11 are all directed to non-statutory subject matter as there is no real-world effect associated with such actions. All other claims are rejected for their dependencies to claims mentioned above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-25, and 27-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Li et al (Improving Branch Predictability in Java Processing), herein referred to as Li.

As per **claim 1**, Li discloses a method, comprising:

accessing branch history information associated with a current operating context from a plurality of designated branch history storage locations (See paragraph 2 of page 4: Branch history is saved in tables) included in a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught), wherein each one of the plurality of designated branch history storage locations is associated with a corresponding plurality of operating contexts including the current

operating context (See section 3 on page 5: Operating system activity is considered); and

predicting a branch based on the branch history information (See paragraph 2 on page 4: Branch history is used for branch prediction).

As per **claim 2**, Li discloses wherein accessing the branch history information further includes:

retrieving branch history information associated with the current operating context (See section 3 on page 5: Predictions are made during runtime).

As per **claim 3**, Li discloses wherein accessing the branch history information further includes: storing branch history information associated with the current operating context (See paragraph 1 of page 15).

As per **claim 4**, Li discloses further comprising:

storing branch history information associated with a first operating context included in the plurality of operating contexts in a first location included in the plurality of designated branch history storage locations (See figure 2 on page 9).

As per **claim 5**, Li discloses further comprising: storing branch history information associated with a second operating context included in the plurality of operating

contexts in a second location included in the plurality of designated branch history storage locations (See figure 2 on page 9).

As per **claim 6**, Li discloses wherein predicting a branch based on the branch history information comprises:

determining a course of action based on a condition of branch history information associated with a selected context associated with a selected one of the plurality of designated branch history storage locations (See figure 2 on page 9)

As per **claim 7**, Li discloses further comprising:

determining the current operating context (See figure 2 on page 9: Done through the execution mode).

As per **claim 8**, Li discloses wherein the plurality of operating contexts includes at least one of an operating system context and a user context (See figure 2 on page 9).

As per **claim 9**, Li discloses wherein the operating system context includes a kernel context (See figure 2 on page 9).

As per **claim 10**, Li discloses an article comprising a machine-accessible medium including a memory having associated data, wherein the data, when accessed, results in a machine performing:

accessing branch history information associated with a current operating context from a plurality of designated branch history storage locations (See paragraph 2 of page 4: Branch history is saved in tables) included in a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught), wherein each one of the plurality of designated branch history storage locations is associated with a corresponding plurality of operating contexts including the current operating context (See section 3 on page 5: Operating system activity is considered).

As per **claim 11**, Li discloses wherein the machine-accessible medium further includes data, which when accessed by the machine, results in the machine performing:

determining the current operating context based on a type of instruction previously executed (See figure 2 on page 9: Done through the execution mode).

As per **claim 12**, Li discloses wherein the machine-accessible medium further includes data, which when accessed by the machine, results in the machine performing:

storing branch history information associated with a first operating context included in the plurality of operating contexts in a first location included in the plurality of designated branch history storage locations (See figure 2 on page 9); and

storing branch history information associated with a second operating context included in the plurality of operating contexts in a second location included in the plurality of designated branch history storage locations, wherein the first and second locations are included in a pair of registers (See figure 2 on page 9).

As per **claim 13**, Li discloses wherein each one of the plurality of designated branch history storage locations is included in a substantially contiguous series of memory locations forming an addressable memory block (See paragraph 1 on page 12: The memory array is a contiguous series of memory locations).

As per **claim 14**, Li discloses an apparatus, comprising:

at least a first storage location to store branch history information associated with a first operating context selected from a preselected plurality of operating contexts (See figure 2 on page 9); and

at least a second storage location to store branch history information associated with a second operating context selected from a preselected plurality of operating contexts (See figure 2 on page 9), wherein the first storage location and the second storage location form a portion of a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught and these two storage locations make up the split branch history predictor).

As per **claim 15**, Li discloses wherein the preselected plurality of operating contexts includes at least one of a user context and an operating system context (See figure 2 on page 9).

As per **claim 16**, Li discloses wherein the first storage location is included in a first designated portion of a memory (See figure 2 on page 9).

As per **claim 17**, Li discloses wherein the second storage location is included in a second designated portion of the memory that does not overlap the first designated portion of the memory (See figure 2 on page 9).

As per **claim 18**, Li discloses wherein the first storage location and the second storage location each comprise one or more registers (See figure 2 on page 9).

As per **claim 19**, Li discloses wherein the first storage location and the second storage location each comprise a plurality of bits within a single register (See table 2 on page 4 and figure 2 on page 9: The register must be comprised on a plurality of bits to hold the information necessary in table 2).

As per **claim 20**, Li discloses further comprising:

a branch history table having a dynamically switched input coupled to at least one bit included in the first storage location and at least one bit included in the second storage location (See figure 2 on page 9).

As per **claim 21**, Li discloses wherein the dynamically switched input can be switched according to an indication of a current operating context included in the

preselected plurality of operating contexts provided by a processor status register (See figure 2 on page 9).

As per **claim 22**, Li discloses wherein the branch history table is capable of receiving an indication of a selected branch address modified by the indication of the current operating context (See figure 2 on page 9).

As per **claim 23**, Li discloses further comprising:

a split branch history table having a first portion to receive at least one bit included in the first storage location and a second portion to receive at least one bit included in the second storage location (See figure 2 on page 9).

As per **claim 24**, Li discloses further comprising:

a processor status register to provide an indication of a current operating context including the preselected plurality of operating contexts to a prediction resource coupled to the split branch history table (See figure 2 on page 9).

As per **claim 25**, Li discloses a system, comprising:

a processor to execute a plurality of instructions within a first operating context selected from a plurality of operating contexts and within a second operating context selected from the plurality of operating contexts (See figure 2 on page 9);

at least a first storage location to store branch history information associated with the first operating context (See figure 2 on page 9); and

at least a second storage location to store branch history information associated with the second operating context (See figure 2 on page 9), wherein the first storage location and the second storage location form a portion of a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught and these two storage locations make up the split branch history predictor).

As per **claim 27**, Li discloses further comprising: a memory coupled to the processor, the memory including the first storage location and the second storage location (See figure 2 on page 9).

As per **claim 28**, Li discloses wherein the memory includes at least one shift register (See paragraph 2 on page 4).

As per **claim 29**, Li discloses further comprising: a processor status register included in the processor to provide an indication of a current operating context included in the plurality of operating contexts (See figure 2 on page 9).

As per **claim 30**, Li discloses further comprising: a split branch history table including the first storage location and the second storage location (See figure 2 on page 9).

As per **claim 31**, Li discloses a method, comprising:

accessing a first branch history associated with a first operating context (See figure 2 on page 9); and

accessing a second branch history associated with a second operating context (See figure 2 on page 9), wherein the first branch history is separated from the second branch history (See figure 2 on page 9) within a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught); and

predicting a branch based on at least one of the first branch history and the second branch history (See paragraph 3 on page 20: A split branch history predictor is taught and these two storage locations make up the split branch history predictor).

As per **claim 32**, Li discloses further comprising: separating the first branch history from the second branch history (See figure 2 on page 9).

As per **claim 33**, Li discloses wherein the first operating context includes an execution of a plurality of user instructions (See figure 2 on page 9), and wherein the second operating context includes an execution of a plurality of operating system instructions (See figure 2 on page 9).

As per **claim 34**, Li discloses wherein predicting a branch based on at least one of the first branch history and the second branch history comprises:

predicting a branch within the first operating context based upon information stored in the first branch history (See figure 2 on page 9); and

predicting a branch within the second operating context based upon information stored in the second branch history (See figure 2 on page 9).

As per **claim 35**, Li discloses a branch prediction apparatus, comprising:

at least a first storage location to store branch history information associated with an execution of a plurality of user instructions (See figure 2 on page 9); and

at least a second storage location to store branch history information associated with an execution of a plurality of operating system instructions (See figure 2 on page 9), wherein the first storage location and the second storage location are separated (See figure 2 on page 9) within a split branch history shift register predictor (See paragraph 3 on page 20: A split branch history predictor is taught).

As per **claim 36**, Li discloses further comprising:

a first storage location to store branch history information associated with a first operating context selected from a preselected plurality of operating contexts (See figure 2 on page 9); and

a second storage location to store branch history information associated with a second operating context selected from the preselected plurality of operating contexts (See figure 2 on page 9).

As per **claim 37**, Li discloses further comprising: a branch history table having a dynamically switched input coupled to the first storage location and the second storage location (See figure 2 on page 9), wherein history associated with the first operation context and the second operating context is stored in a split branch history shirt register predictor (See paragraph 3 on page 20: A split branch history predictor is taught and these two storage locations make up the split branch history predictor).

As per **claim 38**, Li discloses a method, comprising:

predicting a branch within a first operating context using a first strategy (See figure 2 on page 9); and

predicting a branch within a second operating context using a second strategy (See figure 2 on page 9).

As per **claim 39**, Li discloses further comprising: separating a first branch history associated with the first operating context from a second branch history associated with the second operating context (See figure 2 on page 9).

As per **claim 40**, Li discloses wherein the first operating context comprises a user context (See figure 2 on page 9), and wherein the second operating context comprises an operating system context (See figure 2 on page 9).

As per **claim 41**, Li discloses wherein the first strategy includes accessing a branch history associated with a user context (See figure 2 on page 9), and wherein the second strategy includes accessing a branch history associated with an operating system context (See figure 2 on page 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (Improving Branch Predictability in Java Processing), herein referred to as Li.

As per **claim 26**, Li teaches the system of claim 25 (see above).

Li does not teach the system further comprising a wireless transceiver coupled to the processor.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Li to include a wireless transceiver coupled to the processor. In the introduction (Section 1 on page 1), Li teaches that the devices is to be used as a mobile device and it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include a wireless transceiver if mobility was a key feature.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Lai whose telephone number is (571) 272-6749. The examiner can normally be reached on M-F 8:00-5:30 (First BiWeek Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vincent Lai
Examiner
Art Unit 2181

vl
February 10, 2007

DONALD SPARKS
SUPERVISORY PATENT EXAMINER